

IN THE CLAIMS

Please amend the claims as follows:

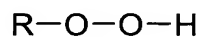
Claim 1 (Currently Amended): A polymer latex, ~~prepared using a sulfur-free and halogen-free chain transfer agent and comprising,~~ comprising, in polymerized form:

- a) from 10% to 80% by weight of one or more monovinylaromatic monomers;
- b) from 0% to 70% by weight of one or more conjugated diene monomers;
- c) from 0 % to 70% by weight of one or more acrylate monomers; and
- d) a remainder of one or more other copolymerizable comonomers, with the condition that a sum of the percentages by weight of components b) and c) is greater than zero,

wherein the polymer latex is prepared by polymerizing a mixture of monomers in the presence of a sulfur-free and halogen-free chain transfer agent,

wherein said chain transfer agent is at least one peroxide selected from the group consisting of compounds of formulae A) to F)

A) hydroperoxides of the formula



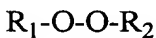
wherein R is H or one of the following radicals:

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl,

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl in combination with [C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl, or

[C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl;

B) peroxides of the formula



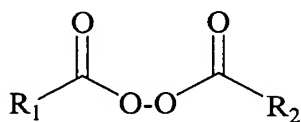
wherein R<sub>1</sub> and R<sub>2</sub> are identical or different and are one of the following radicals:

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl,

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl in combination with [C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl, or

[C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl;

C) peroxides of the formula



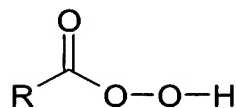
wherein R<sub>1</sub> and R<sub>2</sub> are identical or different and are one of the following radicals:

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl,

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl in combination with [C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl, or

[C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl;

D) peroxocarboxylic acids of the formula



wherein

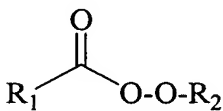
R is H or one of the following radicals:

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl,

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl in combination with [C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl, or

[C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl;

E) peroxocarboxylic esters of the formula



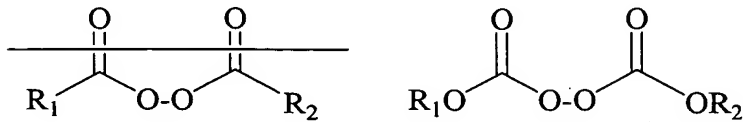
wherein R<sub>1</sub> and R<sub>2</sub> are identical or different and are one of the following radicals:

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl,

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl in combination with [C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl, or

[C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl; and

F) peroxodicarbonates of the formula



wherein  $R_1$  and  $R_2$  are identical or different and are one of the following radicals:

linear or branched  $C_1 - C_{16}$  alkyl,

linear or branched  $C_1 - C_{16}$  alkyl in combination with  $[C_1] C_6 - C_{18}$  aryl, or

$[C_1] C_6 - C_{18}$  aryl; and

wherein said polymer latex has a glass transition temperature of from  $-30^\circ\text{C}$  to  $70^\circ\text{C}$ .

Claim 2 (Original): The polymer latex as claimed in claim 1, wherein said chain transfer agent is at least one peroxide selected from the group consisting of said hydroperoxides.

Claim 3 (Original): The polymer latex as claimed in claim 2, wherein said peroxide is selected from the group consisting of tert-butyl hydroperoxide, cumyl hydroperoxide and mixtures thereof.

Claim 4 (Original): The polymer latex as claimed in claim 1, wherein said peroxide is selected from the group consisting of di-tert-butyl peroxide, tert-butyl peroxybenzoate and tert-butyl peroxy-3,5,5-trimethylhexanoate.

Claim 5 (Currently Amended): The polymer latex as claimed in claim 1, wherein component a) is styrene, component b) is butadiene and component c) is an ~~ethylenically unsaturated carboxylic acid~~ acrylate monomer.

Claim 6 (Original): The polymer latex as claimed in claim 1, comprising in polymerized form: styrene, butadiene, acrylic acid.

Claim 7 (Currently Amended): The polymer latex as claimed in claim 1, comprising 1 to 20% by weight of ~~component c)~~ which is a polymerized nitrile monomer alone or a mixture of nitrile monomers.

Claim 8 (Original): The polymer latex as claimed in claim 7, wherein said nitrile monomer is acrylonitrile.

Claim 9 (Original): The polymer latex as claimed in claim 1, comprising in polymerized form: styrene, butadiene, acrylonitrile, acrylic acid.

Claim 10 (Original): A composition for the coating of paper and/or cardboard, comprising:

the polymer latex according to claim 1.

Claim 11 (Original): The composition as claimed in claim 10, wherein said peroxide is selected from the group consisting of said hydroperoxides.

Claim 12 (Original): The composition as claimed in claim 10, wherein said peroxide is selected from the group consisting of tert-butyl hydroperoxide, cumyl hydroperoxide and mixtures thereof.

Claim 13 (Original): The composition as claimed in claim 10, wherein said peroxide is selected from the group consisting of di-tert-butyl peroxide, tert-butyl peroxybenzoate and tert-butyl peroxy-3,5,5-trimethylhexanoate.

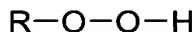
Claim 14 (Currently Amended): A process for the preparation of a polymer latex, comprising:

reacting

- a) from 10% to 80% by weight of one or more monovinylaromatic monomers;
- b) from 0% to 70% by weight of one or more conjugated diene monomers;
- c) from 0 % to 70% by weight of one or more acrylate monomers; and
- d) a remainder of one or more other copolymerizable comonomers, with the condition that a sum of the percentages by weight of components b) and c) is greater than zero, in the presence of a sulfur-free and halogen-free chain transfer agent, to obtain a polymer latex having a glass transition temperature of from -30 to 70°C;

wherein said chain transfer agent is at least one peroxide selected from the group consisting of compounds of formulae A) to F)

A) hydroperoxides of the formula



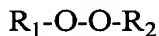
wherein R is H or one of the following radicals:

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl,

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl in combination with [C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl, or

[C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl;

B) peroxides of the formula



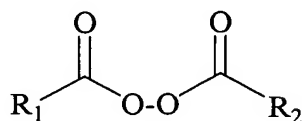
wherein R<sub>1</sub> and R<sub>2</sub> are identical or different and are one of the following radicals:

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl,

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl in combination with [C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl, or

[C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl;

C) peroxides of the formula



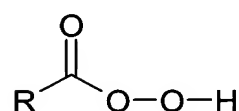
wherein  $\text{R}_1$  and  $\text{R}_2$  are identical or different and are one of the following radicals:

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl,

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl in combination with  $[\text{C}_1] \text{C}_6 - \text{C}_{18}$  aryl, or

$[\text{C}_1] \text{C}_6 - \text{C}_{18}$  aryl;

D) peroxocarboxylic acids of the formula



wherein

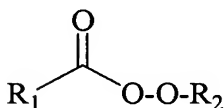
$\text{R}$  is  $\text{H}$  or one of the following radicals:

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl,

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl in combination with  $[\text{C}_1] \text{C}_6 - \text{C}_{18}$  aryl, or

$[\text{C}_1] \text{C}_6 - \text{C}_{18}$  aryl;

E) peroxocarboxylic esters of the formula



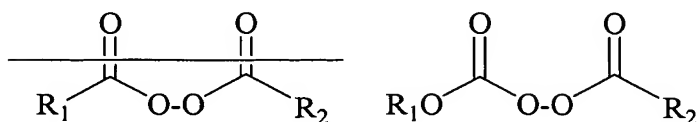
wherein  $\text{R}_1$  and  $\text{R}_2$  are identical or different and are one of the following radicals:

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl,

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl in combination with  $[\text{C}_1] \text{C}_6 - \text{C}_{18}$  aryl, or

$[\text{C}_1] \text{C}_6 - \text{C}_{18}$  aryl; and

F) peroxodicarbonates of the formula



wherein  $\text{R}_1$  and  $\text{R}_2$  are identical or different and are one of the following radicals:

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl,

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl in combination with [C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl, or

[C<sub>1</sub>] C<sub>6</sub> – C<sub>18</sub> aryl.

Claim 15 (Original): The process according to claim 14, wherein said reacting proceeds at a temperature of from 0 to 130°C in the presence of one or more emulsifiers and one or more initiators.

Claim 16 (Original): The process according to claim 14, wherein said chain transfer agent is at least one peroxide selected from the group consisting of said hydroperoxides.

Claim 17 (Original): The process according to claim 16, wherein said peroxide is selected from the group consisting of tert-butyl hydroperoxide, cumyl hydroperoxide and mixtures thereof.

Claim 18 (Original): The process according to claim 14, wherein said peroxide is selected from the group consisting of di-tert-butyl peroxide, tert-butyl peroxybenzoate and tert-butyl peroxy-3,5,5-trimethylhexanoate.

Claim 19 (Currently Amended): The process according to claim 14, wherein component a) is styrene, component b) is butadiene and component c) is an ~~ethylenically unsaturated carboxylic acid~~ acrylate monomer

Claim 20 (Original): The process according to claim 14, wherein said peroxide is present in an amount of from 0.1 to 10% by weight.

Claim 21 (New): The polymer latex as claimed in Claim 1, wherein the peroxide does not act as an initiator.

Claim 22 (New): The copolymer latex as claimed in Claim 1, wherein the peroxide exhibits no thermal decomposition.

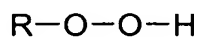
Claim 23 (New): The process as claimed in Claim 14, wherein the reacting is carried out under conditions where the peroxide does not act as an initiator.

Claim 24 (New) The process as claimed in Claim 22, wherein the reacting does not include the thermal decomposition of the peroxide.

Claim 25 (New): A polymer latex, prepared using a sulfur-free and halogen-free chain transfer agent and comprising, in polymerized form:

- a) from 10% to 80% by weight of one or more monovinylaromatic monomers;
  - b) from 20% to 70% by weight of one or more conjugated diene monomers;
  - c) from 0 % to 70% by weight of one or more acrylate monomers; and
  - d) a remainder of one or more other copolymerizable comonomers,
- wherein said chain transfer agent is at least one peroxide selected from the group consisting of compounds of formulae A) to F)

A) hydroperoxides of the formula



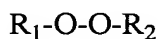
wherein R is H or one of the following radicals:

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl,

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl in combination with  $\text{C}_6 - \text{C}_{18}$  aryl, or

$C_6 - C_{18}$  aryl;

B) peroxides of the formula



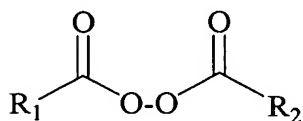
wherein  $R_1$  and  $R_2$  are identical or different and are one of the following radicals:

linear or branched  $C_1 - C_{16}$  alkyl,

linear or branched  $C_1 - C_{16}$  alkyl in combination with  $C_6 - C_{18}$  aryl, or

$C_6 - C_{18}$  aryl;

C) peroxides of the formula



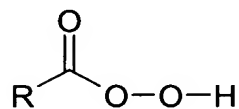
wherein  $R_1$  and  $R_2$  are identical or different and are one of the following radicals:

linear or branched  $C_1 - C_{16}$  alkyl,

linear or branched  $C_1 - C_{16}$  alkyl in combination with  $C_6 - C_{18}$  aryl, or

$C_6 - C_{18}$  aryl;

D) peroxycarboxylic acids of the formula



wherein

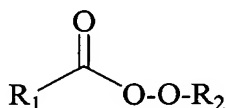
R is H or one of the following radicals:

linear or branched  $C_1 - C_{16}$  alkyl,

linear or branched  $C_1 - C_{16}$  alkyl in combination with  $C_6 - C_{18}$  aryl, or

$C_6 - C_{18}$  aryl;

E) peroxocarboxylic esters of the formula



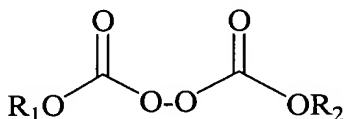
wherein  $\text{R}_1$  and  $\text{R}_2$  are identical or different and are one of the following radicals:

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl,

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl in combination with  $\text{C}_6 - \text{C}_{18}$  aryl, or

$\text{C}_6 - \text{C}_{18}$  aryl; and

F) peroxodicarbonates of the formula



wherein  $\text{R}_1$  and  $\text{R}_2$  are identical or different and are one of the following radicals:

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl,

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl in combination with  $\text{C}_6 - \text{C}_{18}$  aryl, or

$\text{C}_6 - \text{C}_{18}$  aryl; and

wherein said polymer latex has a glass transition temperature of from  $-30^\circ\text{C}$  to  $70^\circ\text{C}$ .

Claim 26 (New): The polymer latex as claimed in claim 25, wherein said chain transfer agent is at least one peroxide selected from the group consisting of said hydroperoxides.

Claim 27 (New): The polymer latex as claimed in claim 26, wherein said peroxide is selected from the group consisting of tert-butyl hydroperoxide, cumyl hydroperoxide and mixtures thereof.

Claim 28 (New): The polymer latex as claimed in claim 25, wherein said peroxide is selected from the group consisting of di-tert-butyl peroxide, tert-butyl peroxybenzoate and tert-butyl peroxy-3,5,5-trimethylhexanoate.

Claim 29 (New): The polymer latex as claimed in claim 25, wherein component a) is styrene, component b) is butadiene and component c) is an ethylenically unsaturated carboxylic acid acrylate monomer.

Claim 30 (New): The polymer latex as claimed in claim 25, comprising in polymerized form: styrene, butadiene, acrylic acid.

Claim 31 (New): The polymer latex as claimed in claim 25, comprising 1 to 20% by weight of component c) which is a nitrile monomer alone or a mixture of nitrile monomers.

Claim 32 (New): The polymer latex as claimed in claim 31, wherein said nitrile monomer is acrylonitrile.

Claim 33 (New): The polymer latex as claimed in claim 25, comprising in polymerized form: styrene, butadiene, acrylonitrile, acrylic acid.

Claim 34 (New): A composition for coating paper and/or cardboard, comprising: the polymer latex according to claim 25.

Claim 35 (New): The polymer latex as claimed in Claim 25, wherein the peroxide does not act as an initiator.

Claim 36 (New): The copolymer latex as claimed in Claim 25, wherein the peroxide exhibits no thermal decomposition.

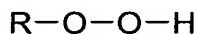
Claim 37 (New): A process for the preparation of a polymer latex, comprising:  
reacting

- a) from 10% to 80% by weight of one or more monovinylaromatic monomers;
- b) from 20% to 70% by weight of one or more conjugated diene monomers;
- c) from 0 % to 70% by weight of one or more acrylate monomers; and
- d) a remainder of one or more other copolymerizable comonomers,

in the presence of a sulfur-free and halogen-free chain transfer agent, to obtain a polymer latex having a glass transition temperature of from -30 to 70°C;

wherein said chain transfer agent is at least one peroxide selected from the group consisting of compounds of formulae A) to F)

A) hydroperoxides of the formula



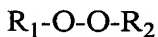
wherein R is H or one of the following radicals:

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl,

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl in combination with C<sub>6</sub> – C<sub>18</sub> aryl, or

C<sub>6</sub> – C<sub>18</sub> aryl;

B) peroxides of the formula



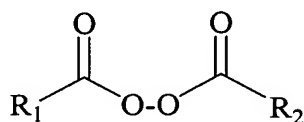
wherein R<sub>1</sub> and R<sub>2</sub> are identical or different and are one of the following radicals:

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl,

linear or branched C<sub>1</sub> – C<sub>16</sub> alkyl in combination with C<sub>6</sub> – C<sub>18</sub> aryl, or

C<sub>6</sub> – C<sub>18</sub> aryl;

C) peroxides of the formula



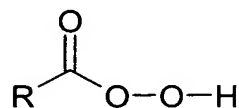
wherein  $\text{R}_1$  and  $\text{R}_2$  are identical or different and are one of the following radicals:

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl,

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl in combination with  $\text{C}_6 - \text{C}_{18}$  aryl, or

$\text{C}_6 - \text{C}_{18}$  aryl;

D) peroxocarboxylic acids of the formula



wherein

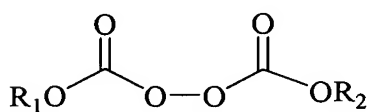
$\text{R}$  is  $\text{H}$  or one of the following radicals:

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl,

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl in combination with  $\text{C}_6 - \text{C}_{18}$  aryl, or

$\text{C}_6 - \text{C}_{18}$  aryl;

E) peroxocarboxylic esters of the formula



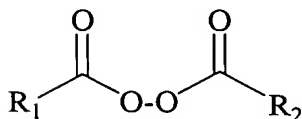
wherein  $\text{R}_1$  and  $\text{R}_2$  are identical or different and are one of the following radicals:

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl,

linear or branched  $\text{C}_1 - \text{C}_{16}$  alkyl in combination with  $\text{C}_6 - \text{C}_{18}$  aryl, or

$\text{C}_6 - \text{C}_{18}$  aryl; and

F) peroxodicarbonates of the formula



wherein  $R_1$  and  $R_2$  are identical or different and are one of the following radicals:

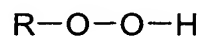
linear or branched  $C_1 - C_{16}$  alkyl,

linear or branched  $C_1 - C_{16}$  alkyl in combination with  $C_6 - C_{18}$  aryl, or

$C_6 - C_{18}$  aryl.

Claim 38 (New): The process according to claim 37, wherein said reacting proceeds at a temperature of from 0 to 130°C in the presence of one or more emulsifiers and one or more initiators.

Claim 39 (New): The process according to claim 37, wherein said chain transfer agent is at least one peroxide of formula:



wherein R is H or one of the following radicals:

linear or branched  $C_1 - C_{16}$  alkyl,

linear or branched  $C_1 - C_{16}$  alkyl in combination with  $C_6 - C_{18}$  aryl, or

$C_6 - C_{18}$  aryl.

Claim 40 (New): The process as claimed in Claim 37, wherein the reacting is carried out under conditions where the peroxide does not act as an initiator.

Claim 41 (New) The process as claimed in Claim 37, wherein the reacting does not include the thermal decomposition of the peroxide.